



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

MAR 30 2000

400 Seventh Street, S.W.
Washington, D.C. 20590

DOT-E 12005
(SECOND REVISION)

EXPIRATION DATE: **February 28, 2002**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: The Boeing Company
Canoga Park, CA
2. PURPOSE AND LIMITATION:
 - a. This exemption authorizes the transportation in commerce of xenon gas in a non-DOT specification composite cylinder which is part of the International Space Station. This exemption provides no relief from any Hazardous Materials Regulation other than as specifically stated herein.
 - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 173.24(b)(1) in that xenon gas will be released in transportation; § 173.302 in that a non-DOT specification cylinder is authorized and the package marking requirement contained in § 172.301(c) is waived.
5. BASIS: This exemption is based on the application of The Boeing Company dated March 7, 2000 submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous materials description	Hazard Class/ Division	Identi- fication Number	Packing Group
Xenon, compressed	2.2	UN2036	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING -

(1) Packaging prescribed is a non-DOT specification composite cylinder which is part of a Plasma Contactor Unit (PCU). Major components of the PCU include the xenon pressure vessel. The xenon pressure vessel is a graphite-epoxy overwrapped cylinder with a 301 stainless steel liner. The pressure vessel has: an operating pressure of 3,000 psia; a maximum expected pressure during ground transportation of 2,338 psia; and a design burst pressure of 9,328 psia. No pressure relief devices are required on the xenon pressure vessel. The packaging is made in accordance with Boeing North American's drawings and other related documents on file with the Office of Hazardous Materials Exemptions and Approvals. The Plasma Contactor Unit is packaged within a specially designed transport container. The combined package weighs approximately 750 lbs.

(2) Emergency response information provided with the shipment and available via an emergency response telephone number must indicate that the xenon pressure vessel is not fitted with pressure relief devices and provide appropriate guidance for a fire.

b. TESTING -

(1) When replacement units are fabricated or refurbished, one unit taken at random out of each lot must be subjected to cyclic pressurization test. The selected unit must be subjected to a total of 50 pressure cycles between zero and the maximum operating pressure (3,000 psia) at a rate not exceed 4 cycles per minute. The unit subjected to the pressure cycle test must withstand the pressure without evidence of distortion or failure. Immediately after the pressure cycle test, the unit subjected to the pressure cycle

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must be burst tested. The burst pressure must be greater than 9,000 psia.

(2) Each xenon pressure vessel must be pressure tested to 5,175 psia prior to shipment.

c. OPERATIONAL CONTROLS

(1) All safety aspects of the loading and transport of the Plasma Contactor Unit must be carried out in accordance with Boeing North American's EID-01893, "ORBITAL REPLACEMENT UNIT TRANSPORT CONTAINER OPERATION PROCEDURE" dated 15 August 1996 on file with the Office of Hazardous Materials Exemptions and Approvals.

(2) The container must be placed on a dedicated motor carrier, secured with the use of tension chains and blocks.

(3) The applicant must ensure securement of the containers meets the requirement of 49 CFR §§ 393.100, 393.102, and 393.104 (securment systems, blocking and bracing).

(4) The cylinder gas release rate must not be more than 7.5 cubic centimeters per minute during transportation.

8. SPECIAL PROVISIONS:

a. A current copy of this exemption must be maintained at the launch facility and the facility from which a transportation operation originates.

b. Shippers using the packaging covered by this exemption must comply with all provisions of this exemption, and all other applicable requirements contained in 49 CFR Part 171-180.

c. Marking - The marking requirement of §172.301(c) is waived.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle.

10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each motor vehicle used to transport packages covered by this exemption.

11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:

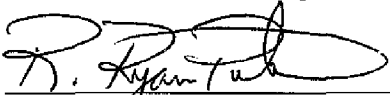
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
- o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incident involving the package and shipments made under the terms of this exemption.

Issued at Washington, D.C.:



For Robert A. McGuire
Acting Associate Administrator
for Hazardous Materials Safety

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(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.
Attention: DHM-31.

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